Introduction

Plastic production has revolutionized modern society, transforming industries and everyday life in countless ways. Yet, this convenience comes at a signi cant environmental cost. is article explores the history, methods, and global implications of plastic production, examining its origins, its role in contemporary life, and the challenges associated with its widespread use [1]. e story of plastic production is a remarkable tale of innovation, industry, and transformation that spans over a century and has shaped virtually every aspect of modern life [2]. What began as a solution to replace costly, scarce, and limited natural materials soon evolved into one of the most versatile and omnipresent substances in the world. Plastic, in its myriad forms, has rede ned industries, economies, and everyday conveniences, from packaging to automotive, healthcare to electronics. However, the journey of plastic is not only one of scienti c achievement and technological progress—it is also a narrative fraught with unintended consequences, environmental challenges, and global reckoning [3].

e origins of plastic date back to the mid-19th century, when the rst synthetic polymers were developed. Unlike natural polymers, such as rubber and silk, which are derived from plants or animals, synthetic plastics were entirely man-made, o ering a promising alternative to the limitations of these organic materials. e breakthrough came in 1907 when Belgian chemist Leo Baekeland invented Bakelite, the world's rst synthetic plastic [4]. is innovation marked the beginning of the modern plastics industry, and soon, plastic became synonymous with progress and innovation, lling the gaps le by traditional materials like glass, wood, and metal. roughout the 20th century,

revolutionary product, especially in the textile and apparel industries, and is still used in clothing, ropes, and industrial materials.

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